



## Valvular Heart Disease

### IMPACT OF LEAD LOCATION AS DETERMINED BY 3D ECHOCARDIOGRAPHY ON TRICUSPID REGURGITATION SEVERITY POST IMPLANTABLE DEVICE PLACEMENT

Poster Contributions

Hall C

Sunday, March 30, 2014, 9:45 a.m.-10:30 a.m.

Session Title: Valvular Heart Disease: Functional Imaging

Abstract Category: 28. Valvular Heart Disease: Clinical

Presentation Number: 1195-346

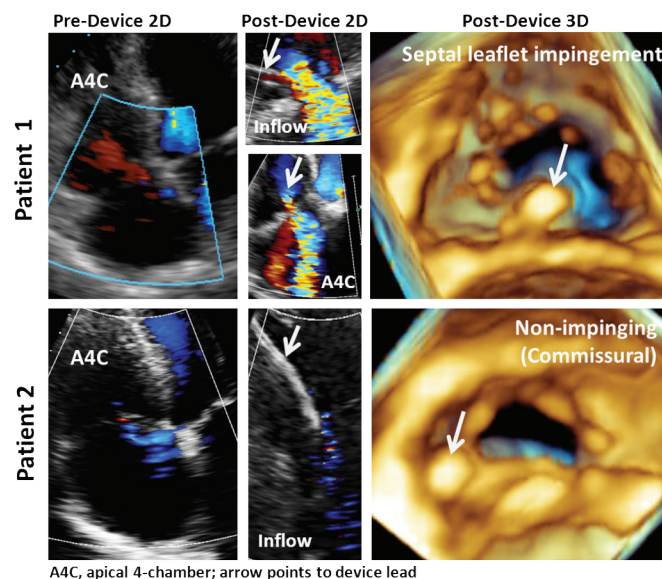
Authors: *Karima Addetia, Anuj Mediratta, Francesco Maffessanti, Megan Yamat, Lynn Weinert, Joshua Moss, Hemal Nayak, Victor Mor-Avi, Roberto Lang, University of Chicago, Chicago, IL, USA*

**Background:** Implantable device leads may cause tricuspid regurgitation (TR) when they interfere with leaflet motion. We sought to determine whether lead location with respect to the leaflets is associated with TR severity, independently of other factors.

**Methods:** We studied 75 patients (67±16 yrs) with device leads who had 2D and 3D transthoracic echocardiographic images of the right ventricle (RV) and tricuspid valve pre- and post device lead placement (DLP). Lead position was determined on cropped 3D images and classified as either impinging or non-impinging on a leaflet. TR severity was estimated by vena contracta (VC). Logistic regression analyses were used to identify factors associated with post-DLP TR among: RV end-diastolic and end-systolic area, fractional area change, tricuspid annular diameter, TR gradient, device lead age, lead impingement and pre-DLP VC.

**Results:** On univariate analysis, post-DLP TR was associated with pre-DLP VC ( $r=0.27$ ) and with impinging leads ( $\rho=0.59$ ). Post-DLP VC values were higher with impinging leads (33 vs 42 patients:  $0.6\pm0.3\text{cm}$  vs  $0.3\pm0.3\text{cm}$ ;  $p<0.01$ ). On multivariate analysis, only leaflet impingement was significantly associated with post-DLP TR severity ( $r=0.57$ ) with an increase in VC of  $0.34\text{cm}$  from pre-DLP (95% CI:  $0.21\text{-}0.47\text{ cm}$ ) and with odds ratio of 14 for developing severe TR.

**Conclusions:** Leaflet impingement is associated with TR severity post DLP, suggesting that 3DE guidance could be beneficial for lead placement in a commissure to minimize TR.



A4C, apical 4-chamber; arrow points to device lead